

EVALUATING RANGES OF COST FOR ALTERNATIVES

The cost estimates developed in the first phase of the Bay-Delta Program have been prepared, based on information available at the time of the estimates, to provide guidance in project evaluation. There is a wide variance in the level of detail used in the cost estimates between action. Some actions have been studied many times in the past, with costs and detailed work accompanying the cost estimate in a study report. In these cases, costs were simply updated to 1996 dollars. Costs for other actions had not been previously studied. These costs were estimated based on comparisons to similar actions. However, at this stage of the Program, there is very little detail describing the basis for these costs. These actions should be expected to have more cost variability, with costs expected to change when further detail is developed for each alternative in future phases of the Program. To account for this wide variation in the level of detail, costs are shown in ranges.

Capital costs for the current set of 10 alternatives range from approximately \$4 to \$11 billion, with the exception of Alternative I. The estimated capital costs by stage are shown in the following figure. This shows that all alternatives have equal costs for stages 1 and 2 (core actions and essential elements). For subsequent stages, Alternative A is the least expensive and Alternatives C and G the highest cost. All other alternatives (except I) fall within the range between A and C/G. Alternative I capital costs are estimated to be \$12 to \$24 billion. This wide range is a result of there being less information available from past studies of this alternative than exists for most of the other alternatives. Thus, these costs have been given separately to prevent upward skewing of the general range of cost estimates. A separate figure is provided for the estimated capital costs by stage for Alternative I.

It is noteworthy that some of the costs included here are borne by existing programs that are already funded (especially core actions and essential elements), so that not all of the costs identified represent new costs. Also, it should be recognized that the costs described for each alternative will not occur all at once. In every alternative, many elements such as habitat restoration and levee stabilization will be implemented over as much as 20 to 30 years into the future and thus costs will be spread over that time frame.

Another important aspect of the cost data relates to understanding the pattern of expenditures over time. In recognition of the fact that many of these actions require extended planning, each alternative has been split into a number of stages. Staging the alternatives also contributes to meeting the affordability Solution Principle as well as enhancing adaptive management opportunities. Staging allows installment payments of capital costs and early benefits from core and essential elements.

To facilitate understanding of the pattern of expenditures for each alternative, a graphical summary of the estimated costs by stage has been prepared. A prototype of this summary is shown in the last figure in this section. The numbers shown in this graphic are for illustrative purposes only, and do not represent any of the actual alternatives. More detailed cost estimates for alternatives and patterns of expenditures will be provided at the workshop.

In this graphic, the estimated capital costs for each stage are represented by the horizontal bars. The total capital cost for the alternative, then, is reached at the far right side of the bottom bar.

In addition, the chart provides information as to the types of costs being incurred in each stage, and for the total alternative. These costs have been categorized by the primary objective being addressed. It is a fundamental part of the Program that actions will be taken that address multiple objectives, so although in the graphic actions and their associated costs are categorized by the primary objective that the action addresses, each primary objective group in reality addresses many other objectives as well. The extent to which actions address multiple objectives and produce multiple benefits has not yet been assessed and therefore the chart does not infer any cost allocations to specific sectors, but is only intended to demonstrate that the cost at any stage will not be borne by a single sector.

This example cost breakdown by primary objective for each stage is shown by the small pie charts next to or inside each staged bar. The cumulative total for the alternative is shown by the larger pie chart in the top right hand corner of the graphic.

When eventual allocations are made across the Program's many objectives, the costs of the solution will be spread over many diverse sectors of the beneficiaries of the actions. As discussed earlier, no single sector should be expected to shoulder sole responsibility for implementing the long-term solution. Rather, the goal is to allocate the costs equitably so that each benefitting sector contributes its fair share toward the solution.

Additional information on the allocation of benefits and costs will be developed in future phases of the Program.